

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2005/051483

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G01V3/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01V G01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| A          | GB 2 385 923 A (STATOIL ASA)<br>3 September 2003 (2003-09-03)<br>page 3, paragraph 2<br>page 10 - page 13   | 1, 25                 |
| A          | GB 2 384 068 A (WESTERNGECO LIMITED)<br>16 July 2003 (2003-07-16)<br>page 3 - page 5  | 1, 25                 |
| A          | URSIN B: "Review of elastic and<br>electromagnetic wave propagation in<br>horizontally layered media"<br>GEOPHYSICS, SOCIETY OF EXPLORATION<br>GEOPHYSICISTS. TULSA, US,<br>vol. 48, no. 8,<br>1 August 1983 (1983-08-01), pages<br>1063-1081, XP002251630<br>ISSN: 0016-8033<br>page 1064, paragraph 2 | 1, 25                 |

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the International filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the International filing date but later than the priority date claimed

- \*T\* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the International search

21 July 2005

Date of mailing of the International search report

28/07/2005

Name and mailing address of the ISA  
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Authorized officer

Häusser, T

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2005/051483

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---|---------------------|----------------------------|---------------------|
| GB 2385923                                | A | 03-09-2003          | AU 2003232334 A1           | 12-12-2003          |
|   |   |                     | BR 0311149 A               | 15-03-2005          |
|   |   |                     | CA 2485522 A1              | 04-12-2003          |
|   |   |                     | EP 1509787 A1              | 02-03-2005          |
|   |   |                     | WO 03100467 A1             | 04-12-2003          |
| GB 2384068                                | A | 16-07-2003          | AU 2003201448 A1           | 24-07-2003          |
|   |   |                     | EP 1470436 A2              | 27-10-2004          |
|   |   |                     | WO 03058276 A2             | 17-07-2003          |



Application No: GB0407697.2

Examiner: Simon Colcombe

Claims searched: 1-34

Date of search: 14 September 2004

## Patents Act 1977: Search Report under Section 17

### Documents considered to be relevant:

| Category | Relevant to claims | Identity of document and passage or figure of particular relevance |
|----------|--------------------|--|
| A        | All                | GB2385923 A<br>(STATOIL)   |
| A        | All                | GB2333364 A<br>(GECO)  |

### Categories:

|   |  |
|---|--|
| X Document indicating lack of novelty or inventive step   | A Document indicating technological background and/or state of the art.  |
| Y Document indicating lack of inventive step if combined with one or more other documents of same category. | P Document published on or after the declared priority date but before the filing date of this invention.          |
| & Member of the same patent family  | E Patent document published on or after, but with priority date earlier than, the filing date of this application. |

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>w</sup> :

G1N

Worldwide search of patent documents classified in the following areas of the IPC<sup>07</sup>

G01V

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC, JAPIO

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

|  |   |   |
|--|---|---|
| Applicant's or agent's file reference<br>JSR.P52956WO  | <b>FOR FURTHER ACTION</b>   | See item 4 below  |
| International application No.<br>PCT/EP2005/051483   | International filing date ( <i>day/month/year</i> )<br>01 April 2005 (01.04.2005) | Priority date ( <i>day/month/year</i> )<br>03 April 2004 (03.04.2004) |
| International Patent Classification (8th edition unless older edition indicated)<br>See relevant information in Form PCT/ISA/237 |   |   |
| Applicant<br>STATOIL ASA   |   |   |

|                          |  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
|--------------------------|--|---|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|--------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| 1.                       | This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| 2.                       | This REPORT consists of a total of 5 sheets, including this cover sheet.<br><br>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| 3.                       | <p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | <input type="checkbox"/>  | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input type="checkbox"/> | Box No. I  | Basis of the report   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/> | Box No. II   | Priority  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/> | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/> | Box No. IV   | Lack of unity of invention  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/> | Box No. V  | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/> | Box No. VI   | Certain documents cited   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/> | Box No. VII  | Certain defects in the international application  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/> | Box No. VIII   | Certain observations on the international application   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |
| 4.                       | The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).   |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                          |           |   |                          |            |                         |                          |             |  |                          |              |   |

|   |  |   |  |                       |  |
|---|--|---|--|-----------------------|--|
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland<br><br>Facsimile No. +41 22 338 82 70 | <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Date of issuance of this report<br/>04 October 2006 (04.10.2006)</td> <td style="width: 50%;">Authorized officer<br/><br/>Yolaine Cussac</td> </tr> <tr> <td colspan="2">e-mail: pt11@wipo.int</td> </tr> </table> | Date of issuance of this report<br>04 October 2006 (04.10.2006) | Authorized officer<br><br>Yolaine Cussac | e-mail: pt11@wipo.int |  |
| Date of issuance of this report<br>04 October 2006 (04.10.2006)   | Authorized officer<br><br>Yolaine Cussac   |   |  |                       |  |
| e-mail: pt11@wipo.int   |  |   |  |                       |  |

# PATENT COOPERATION TREATY

REC'D 26 JUL 2005

From the  
INTERNATIONAL SEARCHING AUTHORITY

PCT

PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/EP2005/051483

International filing date (day/month/year)  
01.04.2005

Priority date (day/month/year)  
03.04.2004

International Patent Classification (IPC) or both national classification and IPC  
G01V3/12

Applicant  
STATOIL ASA

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☐ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/EP2005/051483

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Re Item V.

**1 Reference is made to the following documents:**

D1 : GB 2 385 923 A (STATOIL ASA) 3 September 2003 (2003-09-03)  
D2 : GB 2 384 068 A (WESTERNGECO LIMITED) 16 July 2003 (2003-07-16)

**2 Claims 1-20 and 25-28**

Document D1, which is considered to represent the most relevant state of the art, discloses (the references in parentheses applying to this document) a method of deriving a calibration filter for electromagnetic data (page 3, lines 8-11), comprising the step of generating electromagnetic energy at a source (page 4, lines 27-29).

From this, the subject-matter of independent claim 1 differs in measuring at least one component of the electromagnetic field provided by the source at at least one receiver when the source is sufficiently close to the at least one receiver for the magnitude of a down-going electromagnetic field to be sufficiently greater than that of an up-going electromagnetic field to allow the derivation of a calibration filter, and deriving from the measurement a calibration filter for the at least one receiver for use in processing electromagnetic data.

The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as deriving an accurate calibration filter.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: In document D2 the derivation of a calibration filter for elastic waves is disclosed which uses the minimisation of the down-going pressure to determine the filter. The combination of the teachings of documents D1 and D2 would therefore not lead to a method according to claim 1.

Apparatus claim 25 corresponds to method claim 1 and meets for corresponding reasons the requirements of the PCT with respect to novelty and inventive step.

Claims 2-20 and 26-28 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

**3 Claims 21-24 and 29-34**

The application does not meet the requirements of Article 6 PCT, because claims 21-24 and 29-24 are not clear as they do not contain sufficient technical features for performing any method they refer to. Therefore the references to the method claims are regarded to be unclear and ignored for the purposes of assessing novelty and inventive step.

Therefore the subject-matter of claims 21-24 and 29-34 is not new, as computer programs, the transmission of a computer program, a computer, and data are well-known (Article 33(1), (2) PCT).